KATHERINE MISHKIN COMMENTS

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MEMORANDUM

TO: Paul Olivo, Remedial Project Manager, New York Remediation Branch

FROM: Katherine Mishkin, Hydrogeologist, Program Support Branch, Technical Support Team

DATE: Thursday, May 12, 2011

SUBJECT: **Approval letter for (April 2011) draft RAWP - Wallkill Wellfield**

The revised April 2011 Remedial Action Work Plan (RAWP) is approved contingent upon an agreement between EPA and the PRP that EPA's concerns, outlined below, will be addressed during the design phase of the remedy. EPA's predominant concerns are related to the appropriateness of the wells chosen for groundwater extraction, a characterization of the mass of the source material, and gaining an understanding for site-specific plume migration in fractured bedrock. EPA requests two additional investigation activities are conducted at the site during the early stages of the final design implementation, complete pumping tests and matrix diffusion studies.

OK

Two extraction wells were selected, an overburden well MW-9 and a bedrock well MW-209. In the RAWP it is stated that the use of these wells for pumping will contain off-site groundwater plume migration. EPA is concerned that pumping from MW-209 will draw down contamination from the shallow overburden, making restoration less achievable at the site. The RAWP states that this should not be a concern because during a 5-day period of pumping various bedrock wells, there was only a slow decline observed in all overburden wells and no change in slope of the water table graph. However, this pumping was not continuous over a 5-day period nor in a single well and the fact that there was a slow decline observed in this limited pumping study is concerning. Therefore, these data cannot be used to definitely confirm that bedrock pumping will not lead to contaminant drawdown from the overburden. Contingent upon the final approval of the RAWP, it should be agreed that during the design phase of the pump and treat system, multi-day 24 hour/day pump tests are conducted in a single overburden well, a single adjacent bedrock well, and simultaneous pumping of both an overburden and adjacent bedrock well. These pumping tests should be conducted in the proposed extraction wells, MW-9 and MW-209, as well as an overburden and bedrock well situated closer to the source. If signs of leakage are shown during the pumping tests, indicating the potential for drawdown from the overburden, an alternative remedy that needs to be evaluated is to packer off the most productive zone (95-105 ft in MW-209) and extract groundwater only from these confined depths. Pumping the confined zone may require refurbishment of the well. The well and method found most appropriate for pumping deep water contamination will be used in conjunction with pumping the groundwater contamination draining from the overburden and entering the trench located to the south of MW-5.

Specific Comments

The mass of the source material is currently unknown and given that this is a fractured rock site, to truly understand the plume migration and eventual attenuation, additional transport parameters such as matrix

retardation factors, matrix porosity, and fracture porosity need to be considered. This is an ideal site to conduct matrix diffusion studies because currently the amount of contaminant being diffused into the bedrock is unknown. This may be currently attenuating the contaminant plume, but back diffusion from the matrix to the fractures will likely extend the time period in achieving the ground water cleanup goals. EPA requests that ESI conduct matrix diffusion studies during the design phase of the pump and treat system. With a more accurate understanding for source mass and transport capabilities, this may also help better evaluate a more appropriate location for extraction wells.

The April 2011 RAWP is approved contingent upon a formal response indicating plans for pumping tests and matrix diffusion studies at the site. Pump tests are essential for properly evaluating the appropriateness of the selected remedy in order to insure that pumping in an unconfined aquifer will not exacerbate the contamination on- and off-site. Matrix diffusion studies are important for understanding the mass of the source material, the complexity of transport processes in this fractured setting, and develop an understanding for the length of time before groundwater standards will be achieved.

general Comment 2

Cc:
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